Hatchery Reform Project And Tribal Hatchery Maintenance And Rehabilitation Needs

The first salmon hatcheries in the State of Washington were built more than 100 years ago, largely to compensate for lost natural salmon production caused by damaged and disappearing habitat. Today more than 100 hatcheries are operated in Puget Sound and coastal Washington by the treaty Indian tribes, Washington State Department of Fish and Wildlife (WDFW) and the U.S. Fish and Wildlife Service (USFWS). It is the largest hatchery system in the world.

U.S. Army Pvt. Kevin Harmon, a volunteer at the Nisqually Tribe's Clear Creek Hatchery, passes a female chinook for spawning. The hatchery is located on the army's Fort Lewis base.

These hatcheries supply nearly three-fourths of all salmon harvested in Puget Sound and are important for meeting treaty tribal harvest obligations. Because of the depressed status of many wild salmon runs, there would be no salmon harvest at all in western Washington without hatcheries.

The 1999 listing of several Puget Sound and coastal salmon stocks under the federal Endangered Species Act (ESA) placed a spotlight on all activities that might harm wild salmon, including hatchery programs.The listing helped lead to the creation of the Puget Sound and Coastal Washington Hatchery Reform Project, a systematic, science-based examination of how hatcheries can help recover and conserve salmon populations while supporting sustainable fisheries. The project's independent science panel provided more that 1,000 recommendations for reforming hatchery practices by the tribal, federal and state co-managers. The tribal co-managers have identified new resources necessary are now implementing more than 1,000 recommendations by an independent science panel tasked with examining hatchery practices and facilities.

Some of those recommendations include capital improvements to tribal hatchery facilities that are beyond the tribes' ability to fund. In fact, tribal hatchery facilities are deteriorating badly because of chronic under-funding of much needed hatchery maintenance and rehabilitation needs. This funding shortfall threatens not only the ability of the tribes to implement much-needed Hatchery Reform projects to help protect wild salmon stocks, but also the tribes' basic ability to produce hatchery salmon for harvest.

Hatchery Reform Project

Congress in Fiscal Year 2000 adopted and funded the recommendations of a science advisory team that launched the Puget Sound and Coastal Washington Hatchery Reform Project, a systematic, science-driven examination of how hatcheries can help recover and conserve naturally spawning salmon populations and support sustainable fisheries.

Hatchery Reform means designing and operating hatchery programs in concert with the needs of wild salmon populations. Hatcheries are not a substitute for healthy spawning and rearing habitat, but rather an extension of that habitat – a productive tributary of the river on which a hatchery is situated.

Together with ongoing habitat restoration efforts and strict harvest regulations, Hatchery Reform is a fundamental part of efforts to recover wild salmon and sustain fisheries in Washington.

Implementation

The Hatchery Reform Project combines independent science, the expertise of tribal, state and federal managers, political support and third-party coordination and facilitation in a cooperative effort that is effectively meeting the needs of the resource and people.

During 2001-03, the Hatchery Scientific Review Group (HSRG), the independent science panel established to guide the Hatchery Reform Project, conducted a comprehensive review of hatchery programs throughout the Puget Sound and Washington Coast regions. The HSRG worked closely with the tribal, state and federal managers to develop a clear understanding of hatchery management goals in each region.

During that time, the HSRG developed a scientific framework, hatchery operational guidelines, an applied research program and a number of other tools to aid the managers in implementing Hatchery Reform.

In April 2004, the HSRG provided more than 1,000 recommendations for changes at individual hatcheries and 18 recommendations for changes across the entire western Washington hatchery system. The group also produced three principles that will guide hatchery management in the future:

- Goals for all salmon stocks must be quantified and expressed in terms of their values to the community, such as harvest, conservation, education and research.
- The purpose, operation and management of each hatchery program must be scientifically defensible and consistent with current best available scientific knowledge.
- Decisions must be informed and modified through an adaptive management approach that continuously evaluates those decisions as new scientific information becomes available.

The HSRG further recommended that, as a foundation for reform, hatchery managers must change their definition of success from the total of juvenile fish released each year, to the total number of adult fish that return to sustain the stock and provide fishing opportunities.

Chief among the HSRG's conclusions is that hatcheries can no longer be managed or operated in isolation. Each must be evaluated within the context of the watershed in which it is situated to properly evaluate its risks and benefits, taking into consideration all of the factors affecting a species.

The tribal, state and federal managers are now working to implement the more than 1,000 specific program recommendations made by the HSRG. Databases have been developed for tracking the status of each recommendation, and nearly one-third of the recommendations have been implemented. They range from discontinuation of some hatchery programs to facility modifications to ensure success of conservation efforts.

FY 05 Tribal Hatchery Reform Projects

The goal of tribal hatchery management is to protect, restore, and enhance the productivity, abundance, and diversity of salmon and their ecosystems to sustain ceremonial, subsistence, commercial and recreational fisheries, non-consumptive fish benefits and other cultural and ecological values. Tribal Hatchery Reform Project funding provides financial resources for:

- Scientific support for integrating ecological and genetic factors affecting hatchery success into hatchery management;
- Identifying and developing projects that improve, evaluate, or monitor hatchery practices and strategies; and
- Modifying or constructing hatchery facilities to improve hatchery operations in tribal hatcheries.

Funding for treaty tribal Hatchery Reform projects has been determined through a rigorous competitive process—administered by the Northwest Indian Fisheries Commission—to solicit, develop, and evaluate proposals. In Fiscal Year 2005, the competitive selection and ranking process resulted in 12 projects receiving tribal Hatchery Reform funding of $535,610.

Case Study

100 Years Of Cooperative Salmon Enhancement

One hundred years ago, when Tulalip Indians canoed the Snohomish River toward a fish hatchery operated by the State of Washington, they carried wild salmon for a nascent supplementation program. They also brought with them the origins of today's forward-thinking resource management in the basin.

This year marks the hundredth anniversary of the Tulalip Tribes' cooperative salmon enhancement program with the state.

"It's a significant milestone," said the Tulalip Tribes' Fisheries and Wildlife Director Danny Simpson. "It shows that we have always been concerned with the future of fish runs, and been willing to work together to protect them."

Hatcheries in the Snohomish basin provide recreational opportunities for sport anglers, income for commercial fishermen and hope for recovering imperiled chinook salmon. Joint hatchery programs and agreements with the Washington Department of Fish and Wildlife (WDFW) help ensure that management practices are constantly improving.

Tulalip Tribes fisheries technicians feed coho salmon in the tribes' Upper Tulalip Creek rearing pond.

"Co-management in this area is critical for our hatchery program," said Simpson. "We rely on each other for so much, and our cooperative agreements are helping us achieve salmon recovery."

The tribes have made innovative changes in hatchery policies after consultations between tribal biologists and some of the best state biologists. The Hatchery Scientific Review Group, an independent scientific panel established as part of the Puget Sound and Coastal Washington Hatchery Reform Project, has suggested that the Snohomish could serve as an example of joint action for all other watersheds to follow.

"In this region, we've been able to work well together for many, many years," said the Tulalip Tribes' Terry Williams. "By focusing on what works for fish, we're able to put the most productive policies in place."

Examples abound. To name a few:

- Following the best available science, the tribes and state have systematically adopted initiatives to preserve the genetic integrity of wild fish. The co-managers began phasing Green River fall chinook eggs out of Snohomish hatcheries in the 1990s, instead opting for local Skykomish summer chinook. By 2004, the tribes and the state were producing no hatchery fish with origins outside of the Snohomish basin.
- Using federal Hatchery Reform funding, the tribes undertake various programs to increase fish survival rates. For instance, studies of otoliths (salmon ear bones) and tracking hatchery fish marked with coded wire tags offer valuable information for managers.
- The Tulalip Tribes are also leaders in integrating wild stocks with hatchery broodstock. Though hatchery programs are fundamental to the long-term survival of certain fish runs, when a hatchery salmon mates with a wild fish, undesirable genetic traits may result in offspring. To minimize these risks, the tribes and the state follow federal Hatchery Reform guidelines closely, helping to preserve the genetic integrity of both the hatchery and the natural stock.

In a broodstock program, wild fish are captured and spawned by hatchery staff. The progeny are then reared in a hatchery, resulting in increased survival rates for the fish after release. This type of supplementation program can be an effective means to boost dwindling runs of endangered fish.

"The co-managers here have made great strides in putting cutting-edge science into practice, and in monitoring to be sure what we're doing works," said Steve Young, manager of the Tulalip Tribes' Bernie Kai Kai Gobin Salmon Hatchery. "These are mutually beneficial programs, since they'll provide us with more fish now and in the future."

At a time when salmon populations are flagging in many areas, robust hatchery production in the Snohomish system allows people to fish – while at the same time advancing the cause of salmon restoration. Today, 95-97 percent of the chinook harvested in Tulalip Bay are hatchery fish.

"The tribes and the state have managed to put together a fishery during a time of recovery and tremendous harvest cutbacks. That's a real achievement, and it benefits everyone in the area," said Kit Rawson, senior harvest management biologist with the Tulalip Tribes.

Case Study

Sol Duc River Summer Chinook Checkup

In early summer, two runs of chinook salmon converge on the Sol Duc River.

The abundant spring chinook run begins returning in late April. It's a pure hatchery stock introduced by the State of Washington in the 1970s that returns to a hatchery on the Sol Duc where eggs and milt are collected and young fish reared for release in the river.

The summer chinook run begins returning in July. This is a depressed run that has been supplemented by the Quileute Tribe for 20 years. Tribal technicians capture adult broodstock in the river between July and September and raise the offspring in a hatchery to increase survival rates. The young fish are released in early summer, returning as adults in four to six years.

Young summer run chinook float through the air as they are pumped into the Sol Duc River.

But because a small number of the two stocks intermingle on the spawning grounds, the overall health of the summer run is impossible to determine, complicating efforts to improve it.

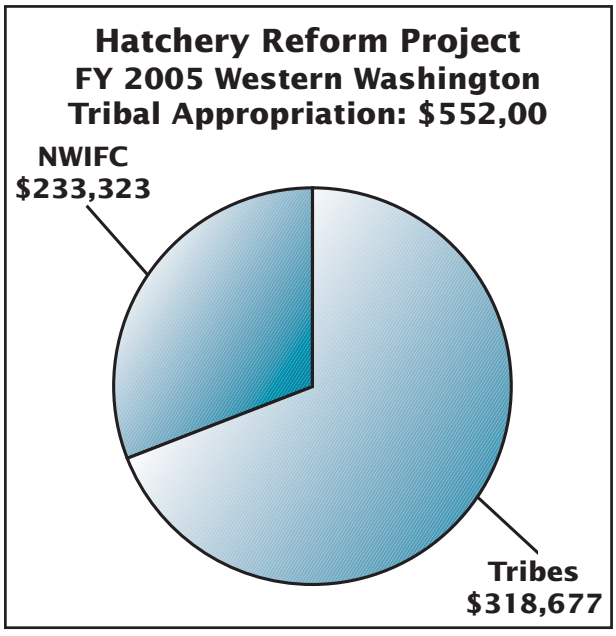
The Quileute Tribe wants to determine to what extent the spring hatchery stock is supporting the summer run. To help make that determination, for at least the next six years the tribe is inserting coded wire tags in up to 200,000 hatchery summer chinook prior to their release.

"Tagging these fish over a number of years will give us a definitive tool to measure our performance," said Dahnielle Buesch, hatchery manager for the Quileute Tribe. "We can make changes in our operations to improve returns and see if they work over time."

Funding Distribution

The majority of the Hatchery Reform funds received by member tribes and their Northwest Indian Fisheries Commission (NWIFC) since FY 00 have been used to implement 68 projects at tribal facilities at a total cost of $2,889,372. Tribes developed a scientifically-based competitive project application and ranking process for awarding contracts to individual tribes to implement hatchery reform activities.

The remainder of the funds has been used to support the tribal hatchery science team within the Enhancement Services Division at the NWIFC, as well as the tribal representative to the Hatchery Scientific Review Group, based at the Nisqually Tribe. The NWIFC hatchery science team consists of a supervising senior geneticist, a second geneticist, a biometrician, and a salmon ecologist.



Hatchery Reform Funding Needs

Unlike the State of Washington, which provides legislative appropriations to the Washington Department of Fish and Wildlife to implement Hatchery Reform, federal appropriations are the only avenue available to the tribes for hatchery management and reform funding. Hatchery Reform is an ongoing process, and consistent federal funding is critical to enable tribes to conduct hatchery-specific studies that provide information leading to progressive modifications of hatchery programs and facilities.

Tribes are continually re-evaluating their programs to address the most pressing salmon related issues. Significant portions of tribal programs and resources have been refocused to address salmon recovery issues such as ESA and Hatchery Reform.

The member tribes of the NWIFC continue to contribute to technical expertise regarding changes needed in hatchery programs. They have jointly completed resource management plans for Puget Sound hatcheries. They will also continue to contribute technical expertise in genetics and hatchery management and, to the degree feasible, utilize extremely limited hatchery maintenance funds provided through the Bureau of Indian Affairs to assist in implementation of Hatchery Reform.

Congress slashed tribal funding for Hatchery Reform from $3 million in FY 04 to just $552,000 in FY 05. No federal funding was received for FY 06.

For FY 07, the tribes are requesting that $500,000 be added to the NWIFC BIA 638 contract to support existing scientific staff positions necessary for ongoing implementation of the Hatchery Reform Project.

FY 2005 Hatchery Reform Appropriation

	WDFW	NMFS	**NWIFC**	USFWS	HSRG	LLTK	IAC	Total
Independent Scientific Review, Oversight And Planning					$332,000			$332,000
Agency Scientists and Assistants to Support Scientific Decision Process	$850,750	$70,550	**$233,323**	$70,550				$1.225M
Hatchery Practices, Structural Improvements			**$318,627**	$41,500				$360,127
Research Grants					$278,050			$278,050
Facilitation and Communication						$244,850		$244,850
Budget Administration				$25,000			$35,000	$60,0006
Total	$850,750	$70,550	**$551,950**	$137,050	$610,050	$244,850	$32,926	$2.49M

WDFW = Washington Dept. of Fish and Wildlife; NMFS = National Marine Fisheries Service;
NWIFC = Northwest Indian Fisheries Commission; USFWS = U.S. Fish and Wildlife Service;
HSRG = Hatchery Scientific Review Group; LLTK = Long Live the Kings;
IAC = Interagency Committee for Outdoor Recreation